



U M O D P C



RAIL OPERATIONS

612-404-03



Surface Transportation



- What if unit equipment is non-roadable?.... or is beyond organic lift capability.... or is beyond 400 mile motor march criteria?



...Then you must depend upon commercially provided service like rail!



Responsibilities -- General



- The deploying unit & installation both have planning and execution responsibilities for major rail activities
 - Rail loading/unloading
 - Restraining Material
 - Rail site preparation
 - Rail car inspection





Unit Responsibilities



- Unit commander: Overall responsible for preparing unit for rail operations
- Major unit responsibilities:
 - Prepare rail movement plan
 - Determine rail movement requirements
 - AUCL to DEL
 - Prepare equipment for rail movement
 - Load railcars



Unit Responsibilities (Cont)



- Specific responsibilities:
 - Appoint an OIC for the rail operation
 - Designate safety officer
 - Coordinate with Director of Public Works for blocking and bracing material
 - Provide trained load teams



Unit Responsibilities (Cont)



- Ensure vehicles are properly prepared/configured
 - Removing canvas and bows
 - Securing moving vehicle parts
 - Use FORSCOM/ARNG 55-1 & MTMCTEA Pam 55-19
- Coordinate logistical support for railhead ops
 - Lighting, latrines, mess, and medical



Unit Responsibilities (Cont)



- Ensure tie-down teams have proper equipment
- Stage equipment
- Ensure sufficient numbers of cars are spotted
- Inspect rail cars
- Conduct safety briefings
- Prepare rail cars for loading
- Load equipment on rail cars



Installation Transportation Office Responsibilities



- Computes railcars based on the shipping configuration of the equipment
- Orders rail cars based on deploying unit requirements.
- Inspects rail cars IAW AAR rules.
- Provides technical supervision for rail loading operations
- Liaison between MTMC and rail agent



Installation Transportation Office Responsibilities (Cont)



- Notifies the Unit on type and quantity of railcars, and railcar arrival schedule
- Maintains rail loading schedule according to the movement order/directive





Director of Public Works (DPW)



- Provides B & B materials for deploying units
- Deploying units must determine requirements & provide in advance to the DPW.





Rail Carrier Representative Responsibilities



- Joint inspection with ITO rep before cars positioned at loading ramp.
- Inspection following railcar loading to ensure:

Loaded railcars comply with AAR rules



Rail Load Plan -- FORSCOM Form 285-5-R



- Provides worksheet to assist in manual load planning
- TC-ACCIS provides automated rail load planning capability

Figure 1 illustrates a 2D grid world environment. The grid is 10x10. The start state 'S' is at (1,1). The goal state 'G' is at (10,10). Obstacles are represented by black squares. The diagram shows a path from S to G, with a red arrow indicating the direction of movement.



Railcar Requirements



- Rail cars are obtained by ITO in the types and quantities required, based upon the deploying unit's requirements
- Deployment may be by commercial or "DODX" railcars





- In TM 55-2200-001-12 (extract H-1), The Official Railway Equipment Register table is used to determine the types of rail cars needed, and their associated capacity and dimensions



Railcars



- There are several types of railcars used for military exercises and deployments
 - Open Top Cars
 - Flat Cars
 - Gondolas





Railcars (Cont)



- Closed Cars
 - + Box car
- Specialty Cars
 - + Multilevel
 - + Heavy lift
 - + TOFC





ITO Requests Rail Routing from MTMC



MTMC obtains routing from rail company selected



Rail Loading Requirements and Procedures



Preparing Unit Equipment for Rail Movement



- The deploying unit is responsible for preparing its equipment for rail movement





Preparing Vehicles Prior to Loading



- Vehicle Preparation Requirements:
 - All lifting and tiedown shackles attached to vehicles
 - Fuel tanks no more than 3/4 full
 - Canvas and bows removed or banded
 - Windshields Protected





Preparing Vehicle Prior to Loading (Cont)

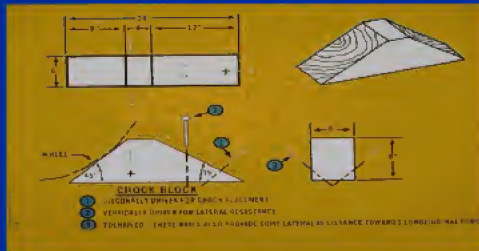


- Reduce vehicle configuration
- Secure any materials or equipment
- Bands must be approved by AAR.
- Ensure that hood latches are functional and secure.





Blocking and Bracing Materials



- Blocking & bracing materials are used to prevent cargo from shifting



Rail Site Facilities



Lighting

Medical support





Rail Site Facilities (Cont)



- Safety Procedures
 - Command and control facilities
 - Lighting
 - Latrine facilities
 - Messing
 - Medical support





Safety Requirements



- Appoint Safety OIC or NCOIC
- Qualified and properly equipped medical personnel on site
- Brief all soldiers on established safety procedures:
 - Avoid electrical wires, poles, switches
 - Never walk between or backward on rail cars
 - Running & jumping between cars is prohibited



Safety Requirements (Cont)



- No sleeping in or around cars
- All personnel stay clear of main track
- Personnel stay clear of rail cars when vehicles are moving on cars
- Minimum speed is used when driving vehicle onto railcars.





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Rail Site



- Rail site must be clean and free of debris.
- Ensure spanners are available.
- Ensure that MHE is on site for equipment that requires MHE support





Inspection of Railcars



- Rail cars are inspected prior to being positioned at final loading locations
- Purpose of inspection is to determine the cars suitability for the intended equipment/vehicle loads
- After railcars are accepted, Military accepts full responsibility to comply with AAR rules



Inspection of Railcars (Cont)



- Deploying unit and ITO representative inspect railcars prior to loading equipment. Checks include:
 - Doors on closed cars open and close and interior is free of debris
 - Open car decks are free of residue and old blocking & bracing materials
 - Chains are present and serviceable on chain rail cars



AAR Loading Rules



- The AAR makes no provision to protect cargo from the elements or forms of damage





AAR Loading Rules (Cont)



- The loading rules are applicable to both the railroad and the ITO.

- ① Loads can not exceed railcar limits





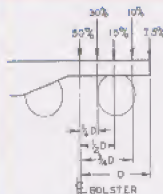
AAR Loading Rules (Cont)



- ② Do not exceed one half the load limit of the car on any axle.

Permissible Concentrated Load
Percent of Stenciled Load Limit

50
30
15
10
7.5



SKETCH 2.
LOAD CONCENTRATED AT SPECIFIC POINTS



AAR Loading Rules (Cont)



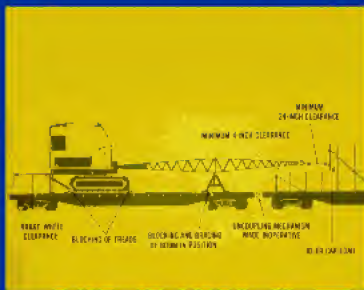
- ③ Balance load evenly on car
- ④ When loading large and heavy items not covered by rules, load largest dimensions and heaviest weight on the floor to prevent tipping
- ⑤ Secure items having a high center of balance to prevent tipping while in transit.



AAR Loading Rules (Cont)



- ⑥ Use idler cars when loads extend beyond the end of the loaded car.



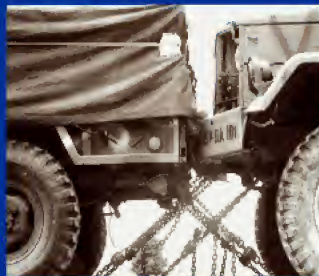
- ⑦ Do not place heavy equipment on trailers that will ride on flat cars or TOFC



Vehicle Spacing



- Vehicles require a minimum of 10 inches of space between vehicles.



Wrong spacing



Loading Multilevel Cars



- Exercise caution when loading vehicles on or moving vehicles through multilevel rail cars. Check deck heights
- Decks may be different heights causing vehicle to strike the upper deck.





Setting Vehicles



- After positioning vehicle on railcar, vehicle operator:
 - Places transmission in neutral
 - Sets parking brake
 - Places battery switches in "off" position



Tie-down Procedures



- When securing vehicles use these techniques.

- 1 Inspect chain assemblies and components.
- 2 Apply chains in pairs
- 3 Turntable type winches





Tie-down Procedures (Cont)



4 Ensure proper wire or chain tension

- Place tension on wire rope to allow no more than one inch deflection.





Tie-down Procedures (Cont)



- ⑤ Secure excess wire rope or chain to the tension bearing part of the wire rope.
- ⑥ On chain devices, secure open-faced hooks to chain link with wire or nylon tie strap.
- ⑦ Lock chain-tightening device with wire.
 - Turnbuckles must have jamnuts tightened wrench-tight using two wrenches



Tie-down Procedures (Cont)



- ⑧ Secure chain through tie-down points at forty-five degree angle.
- ⑨ Pull chain tight as possible, ensuring that there are no twists or kinks, and secure chain hook to chain.





Tie-down Procedures (Cont)



- ① Hand tighten turnbuckles first, then continue to tighten with open end or crescent wrench until 1/8 inch of the rubber compression ring shows.
- Store used chain assemblies in the rail car channel



Loading and Tie-down Checklist



- Checklists should be distributed to the loading teams. The checklist should contain the following:

Loading and Tiedown Checklist For Vehicles on Chain Tiedown Flatcars

NOTE: Copies of this page should be distributed to loading teams.

- ☐ Make certain all hood latches are secured.
- ☐ Leave at least 10 inches between vehicles.
- ☐ Check for proper brake wheel clearance.
- ☐ Do not cross the chains.
- ☐ Use symmetrical tiedown patterns.
- ☐ Secure tiedowns at approximately 45° angles.



Loading and Tie-down Checklist (Cont)



- Checklist Cont:

- ☐ Seat and lock chain anchor or winch.
- ☐ Secure shackle in tiedown provision with wire tie or cotter pin.
- ☐ Pull chain tight and attach hook above the compression unit.
- ☐ Tighten chain.
- ☐ Use appropriate tool.
- ☐ Make sure chain is not kinked or binding.



Loading and Tie-down Checklist (Cont)



- Checklist Cont:

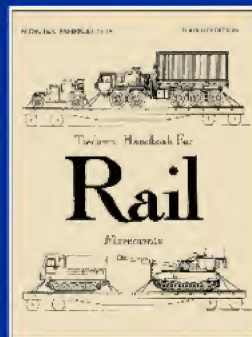
- ☐ Secure hooks with wire or nylon tie straps.
- ☐ Make sure turnbuckles are wired or locked.
- ☐ Tighten jamnuts with two wrenches.
- ☐ Do not secure chains to axles or springs unless figure shows to.
- ☐ Make certain turrets and guns, radiator doors, side skirts, outriggers, crane booms, expansible van bodies, and so forth are secured from extending up or over the side of the flatcar.



Tie-down Illustration



- Appendixes B and C provide tie-down procedures for the transport of military vehicles

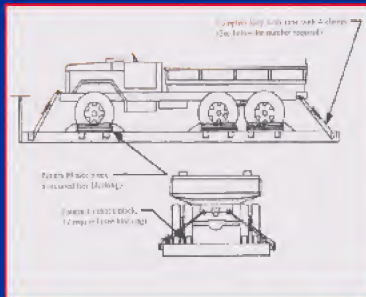




Three Axle Vehicle -- Tie-down Illustration



- 6 X 19
WRC IPS
Wire Rope

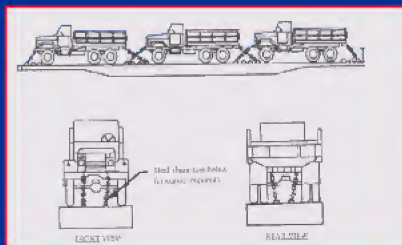




Three Axle Vehicle -- Tie-down Illustration (Cont)



- Alloy Steel Chain





Final Inspection



- Final inspection is made after the railcars are loaded to ensure that the contents are loaded, blocked and braced in compliance with AAR loading rules.
- The rail representative is the final approving authority for accepting rail loads.





Rail Equipment: Characteristics and Capabilities



Association of American Railroads





Defense Freight Rail Interchange Fleet



UMODPC

Flatcars:
General Purpose 1477
Special Purpose 139

Tank cars:
General Purpose 375
Special Purpose 18

Boxcars:
Special Purpose 30
Refrigerated 9

Misc cars:
Escort Cabooses 6
Guard Cars 5
Spec Lease 11

TOTAL DODX: 2070

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ASMP Railcar Requirements



- DA DCSOPS sets priority on which installations get railcars first.

- Ft Stewart	233
- Ft Hood	185
- Ft Carson	85
- Ft Campbell	236
- Ft Benning	62

AMCCOM Installations:
198 cars at
12 Ammo Plants



MTMC Managed Railcars



Total rail fleet: Approximately 2,070



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Railway Equipment



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Boxcars



- US Boxcars in domestic service have a capacity of about 100k lbs., or over 3900 cu feet.
- Ideal for commodities requiring protection from weather or susceptible to pilferage: foodstuffs, medicines, electronics, spare parts





Tank Cars



UMODPC

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Gondola Cars



- If car sides are necessary to keep bulk loads from shifting, use gondola cars





Hopper Cars



- Cars can be either covered or open at the top
- Used for transporting loose bulk commodities





Flat Cars

- Ideal for transporting military cargo and vehicles
- Equipment may be carried on DOD or common carrier flatcars





68 Foot Flat Car



- 4000 Series
 - 140 Ton Capacity
 - Contains integral spanner & chains





89 Foot Rail Car



- 4200 - Series
- 85 -100 ton capacity
- Used for wheeled and light tracked vehicles





Chain Tie-down Flat Cars



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Multilevel Flat Cars



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Multilevel Flat Cars (Cont)



- Ramps are used to load the upper levels





Trailer on Flatcar (TOFC)



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Container on Flatcar (COFC)



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Switch Engines



- Used to switch rail cars in and out of a loading area.





Line Haul Locomotives



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Caboose



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